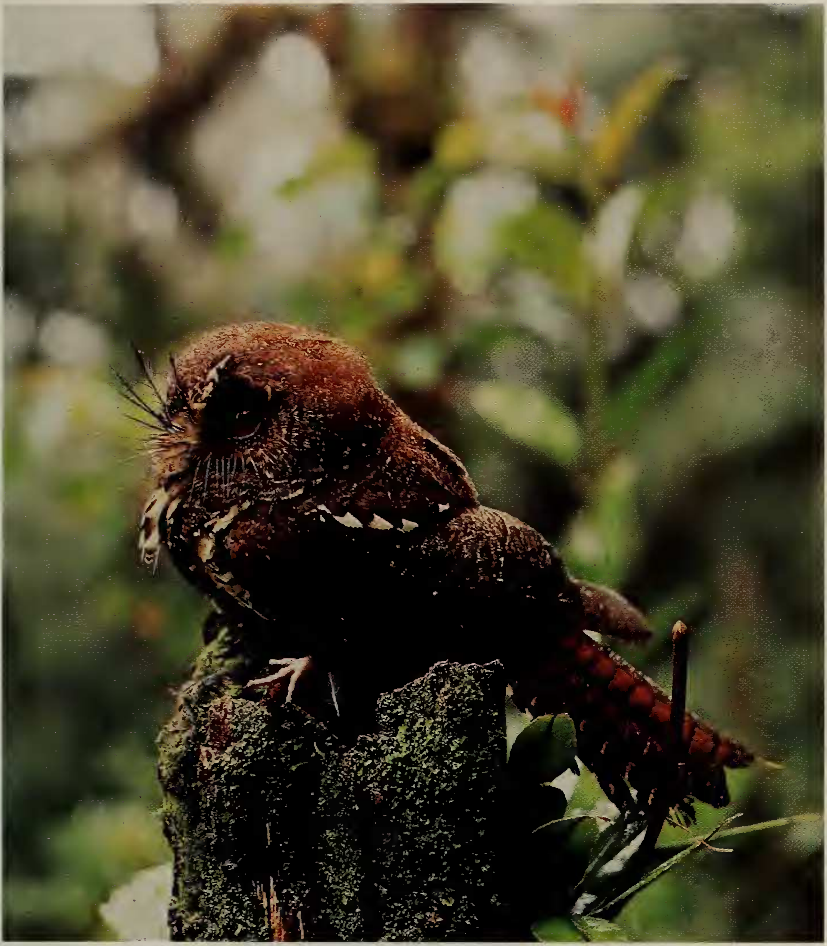
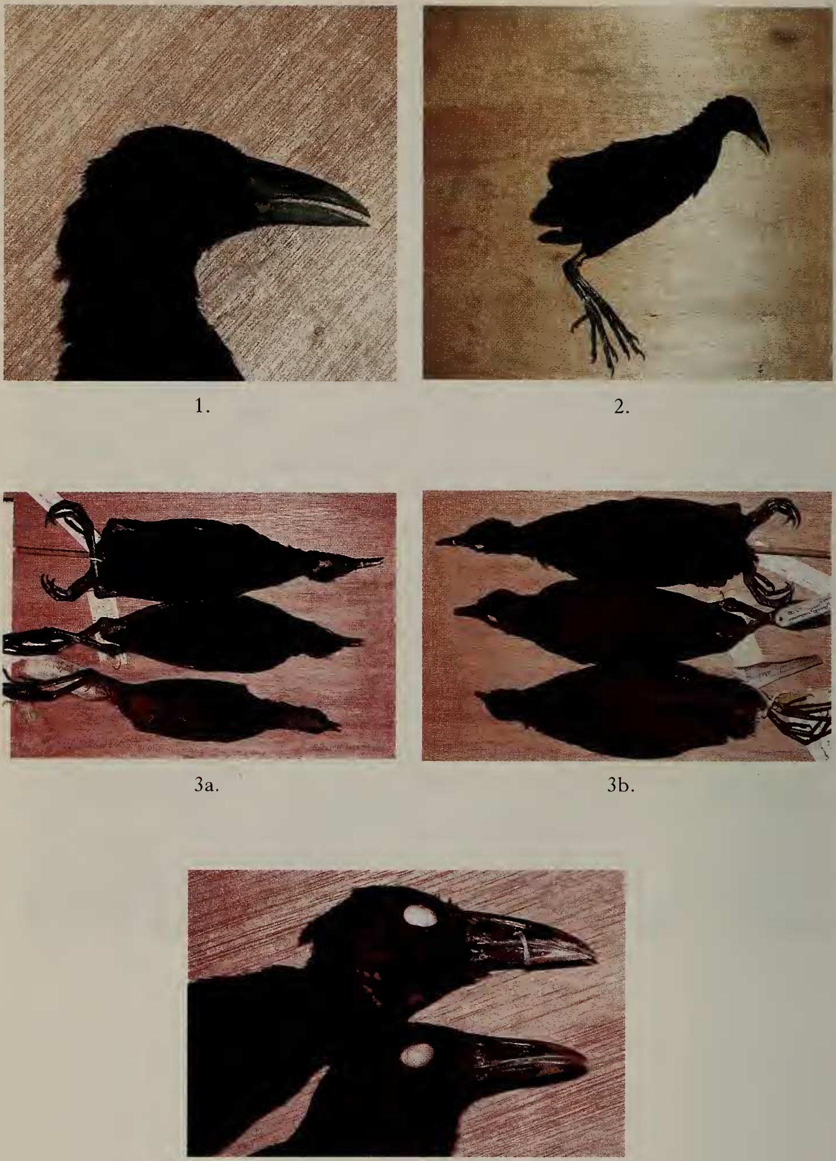


Plate 1.



1. 2.

3a. 3b.

4.

Plate 2

1. Head of recently dead *Amaurornis magnirostris* Karakelong Island, September 1996.
2. Recently dead *A. magnirostris*, Karakelong Island, September 1996.
3a. Comparison of *A. magnirostris* type specimen with specimens of *A. olivaceus* and *A. moluccanus* underparts.
3b. Upperparts.
4. Comparison of bill structure and length of *A. magnirostris* and *A. olivaceus*.
Photographs by Frank Lambert.

A new species of *Amaurornis* from the Talaud Islands, Indonesia, and a review of taxonomy of bush hens occurring from the Philippines to Australasia

by Frank R. Lambert

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Bush hens in the Talaud Islands

During August and September 1997, I observed and heard several forms of rail, whose identity was puzzling, on the island of Karakelong in the Talaud archipelago, Indonesia. One of these proved to be a new species of *Gymnocrex* (Lambert 1998), whilst a second is the subject of this paper.

The first observation was made on 17 August, when a rallid was heard giving very quiet single alarm notes on a steep slope in primary forest, inland from Toabatu in the vicinity of Mt Manuk (4°19′N 126°50′E). This observation was made at an altitude of 300–400 m a.s.l. in an area of understorey dominated by rattan *Calamus* sp., in undisturbed habitat. The bird was very inquisitive, and approached to within a few metres but was never seen well. However, it was clearly large and appeared to be a species of *Amaurornis*: I had already heard the distinctive grating and squealing calls typical of a bush hen, believed to be Plain Bush Hen *A. olivaceus*, near the coast on 15 August 1996.

The presence of a bush hen on the island was of interest in itself, since no previous records of *A. olivaceus* had been reported for the Talaud Islands by White and Bruce (1986), although F. G. Rozendaal (*in litt.* 1997) had heard bush hens on the island during a visit in 1985. The brief views of the bird obtained on 17 August did not suggest a typical bush hen, the bird appearing to be considerably larger and darker than individuals of *A. olivaceus moluccanus* that I had seen elsewhere in Indonesia (This taxon is treated as a separate species, *A. moluccanus*, by some recent authors, including Sibley & Monroe (1990)). Furthermore, the habitat was perhaps unusual, since in Indonesia *A. olivaceus* is usually encountered in secondary growth and adjacent damp grasslands rather than in primary forest (pers. obs.). In some parts of its range, however, it has been found in swampy forest bordering wetlands (Rand & Gilliard 1967) and in forest edge (Beehler *et al.* 1986).

Three days later, another individual of this *Amaurornis* was observed, again in tall primary forest inland from Beo, but this time in a relatively flat area with scattered patches of very swampy ground and a relatively sparse understorey, at *c.* 100 m altitude. I disturbed the bird and it ran about 20 m before stopping abruptly. Here it extended its neck upwards and stood motionless, evidently watching me. A clear

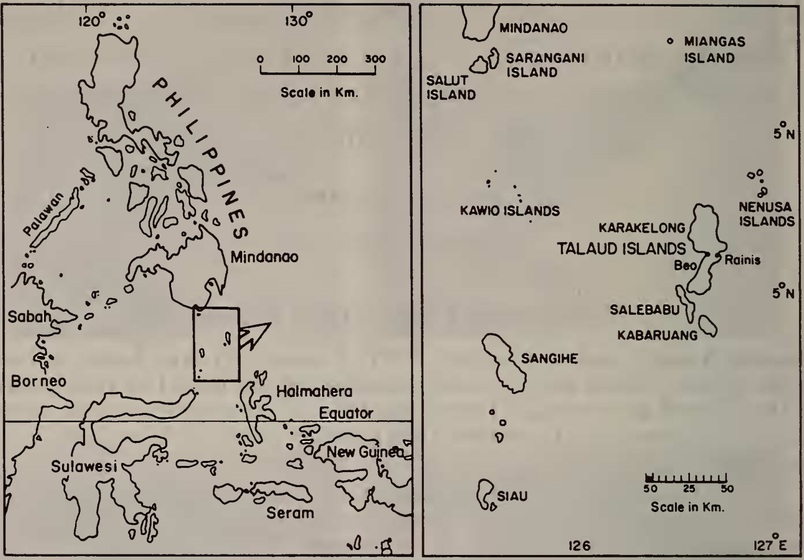


Figure 1. Location of the Talaud Islands.

impression of the bird was obtained: it was very robust, all dark and had a striking long, broad, deep-based pale greenish bill and a red eye.

On 2 September, an *Amaurornis* was observed three times, in forest edge near the coast, to the south of Beo (see locality map, Figure 1). Calls presumed to be bush hens had been heard in the area at first light, but later some other unusual calls were heard that at first were mistakenly believed to have been made by a frog. They had been coming from a wet scrubby area on the edge of forest where there was permanent water. The same calls were also heard originating in forest beside a road and, apparently in response, from a narrow strip of littoral swamp forest bordered by coconut plantation on the other side of the road.

Using playback of these frog-like vocalisations, an *Amaurornis* resembling that observed on 20 August was again observed, albeit very briefly, as it approached quietly from the swamp forest in response to the tape. The bird was exceedingly shy and burst into a run before binoculars could even be raised. A slightly longer view was obtained of a different individual from a hidden vantage point behind a tree, again using playback. Lastly, on 2 September, a pair was briefly observed again, without using playback, as they moved along the edge of a small stream covered with scrub and patches of trees but bordering more open dense herbage and grassland.

Despite the brevity of these accumulated views, it was clear that this was a different taxon to the Plain Bush Hens that the author had observed previously in the Moluccas, and on the island of Sangihe in the previous month.

Subsequently, on 6 September 1996, a man was encountered selling various rallids in Beo. These had been caught near the small town of Rainis, and included one dead specimen of the unidentified *Amaurornis*, three live and one dead Plain Bush Hen *Amaurornis olivaceus moluccanus*, as well as one live *Gymnocrex* rail (Lambert 1998). After discussion with officers from the local office of the Directorate of Forest Protection and Nature Conservation (PHPA), the dead, unidentified *Amaurornis* was purchased from the hunter and a specimen was made.

The presence of two species of *Amaurornis* bush hen on Karakelong is of great significance, and provides good reason to review the taxonomy of the bush hens that occur from the Philippines to Australasia. The White-breasted Waterhen *Amaurornis phoenicurus*, which also occurs in this region, is not considered a bush hen and is not dealt with in this review.

Amaurornis taxonomy

There have been two views of the taxonomy relating to the *Amaurornis* bush hens that occur in the Philippine archipelago, the Moluccan Islands, New Guinea region and Australia. Apart from the very distinctive Isabelline Bush Hen *A. isabellinus* of Sulawesi, the majority of recent authors, presumably following Peters (1934), have treated all the "plain" bush hens from Philippines to Australasia as one species: Plain Bush Hen *A. olivaceus* (e.g. Olsen 1973, Ripley 1977, White & Bruce 1986, Dickinson *et al.* 1991, Andrew 1992, Marchant & Higgins 1993). These authors did not discuss any alternative treatment.

A. olivaceus of the Philippines was originally described as a species (Meyen 1834) and was retained as such by Sharpe (1894) in his catalogue of the birds in the British Museum, vol. 23, which was the first attempt at a classification of the family. Sharpe also listed *A. moluccanus*, with a range covering the Moluccas, New Guinea, Bismarck Archipelago and Australia. In contrast to other authors, McAllan & Bruce (1988) also recognised two species, treating those in the Philippines as Plain Bush Hen *A. olivaceus*, but other populations, from the Moluccas to Australia, as a separate species, Rufous-tailed Bush Hen *A. moluccanus*. This latter taxonomic treatment was subsequently adopted without discussion by Sibley & Monroe (1990) and del Hoyo *et al.* (1996), despite the fact that no author had ever provided adequate reason for recognising two species. McAllan & Bruce (1988), for example, simply stated that "the populations of bush-hen in Australasia are quite distinct from *A. olivaceus* (Meyen 1834) of south east Asia (White & Bruce 1986) and may best be treated as an allospecies, as adapted by us here (see also Wolters 1982)".

In contrast, the recent authoritative and more taxonomically rigorous checklist to birds of the Indomalayan region (Inskipp *et al.* 1996) treated these taxa as conspecific (as Plain Bush Hen *A. olivaceus*), following Marchant & Higgins (1993) and specifically mindful of the fact that no publication had provided a reasoned account of why two separate allopatric species should be recognised (T. Inskipp, pers.

comm.). However, the existence of two similar, sympatric *Amaurornis* taxa on Talaud clearly provides a good reason to re-examine the taxonomy of these birds.

How many species of bush hen?

Bush hens from the Philippine Archipelago are consistently larger than those to the south-east (i.e. Moluccas to Australasia). Indeed, my measurements of the series of *Amaurornis* from the Philippines, Moluccas, New Guinea, New Britain and Australia in the Natural History Museum (BMNH), Tring (Table 1), and those published elsewhere (Table 2), show that *olivaceus* from the Philippines is longer-billed, longer-winged, has a longer tarsus and is heavier than other populations. Only tail measurements seem to overlap. Furthermore, the plumages of these two populations, though rather plain, also show consistent differences. Philippine *A. olivaceus* is overall slightly darker than are other populations, and although all share a contrast in colour between the undertail-coverts and the rest of the underparts, this is much more evident and striking in the paler south-eastern birds. The undertail-coverts, tarsal feathering and often lower belly of south-eastern birds are buff, typically closest to the Cinnamon-Drab (colour number 219c) or Tawney (38) of Smithe (1975), but sometimes paler (Pale Pinkish Buff; 121D) on the lower belly, whilst those of populations in the Philippine islands are usually a much darker russet colour (Cinnamon-Brown (33) to Russet (34)). Some individuals from the Philippines, however, have the extreme tip of the undertail-coverts a similar colour (Tawney (38)) to birds from the south-east.

Comparison of vocalisations of the population of bush hens is difficult because few recordings exist of birds from the Philippines. However, four recordings of the shrieking calls (Clarke 1975) of Philippine birds, when compared with a series of recordings of shrieking calls of Australian birds, clearly sound very different (comparison made using the Wildlife Collection in the British Library's National Sound Archive). Whilst similar in pattern, those of Australian birds are distinctly less harsh, higher-pitched and probably best described as being more melodious than those from the Philippines.

Based on these differences in plumage and biometrics, and on differences in known, comparable types of vocalisations, it would seem reasonable to treat the populations of bush hens from the Philippine Islands as a species separate from those to the east, therefore supporting the opinion of McAllan & Bruce (1988) that there are two species: *A. olivaceus* in the Philippines, and *A. moluccanus* elsewhere. Whilst other authors have proposed the common names Rufous-tailed Bush Hen or Rufous-tailed Moorhen for *A. moluccanus*, this does not seem to be very appropriate. The tails of *moluccanus* and *olivaceus* are very similar in colour: between Prout's Brown (121A) and Brussels Brown (121B). Furthermore, all the bush hens are rather plain, so that Plain Bush Hen is also a poor name: more appropriate alternatives are suggested here; Philippine Bush Hen for *A. olivaceus* and Pale-vented Bush Hen for *A. moluccanus*.

TABLE 1

Biometrics of five species of *Amaurornis*. Comparison of wing measurements are not included since the wing of the only specimen of *A. magnirostris* was frayed and missing feathers (but see Table 2). (Measurements in mm)

Taxon		Bill length[1]	Nares to tip	Depth at nares	Tarsus length	Proximal tarsus width[2]
Amaurornis olivaceus	Mean (sample size)	37.64 (15)	16.71 (14)	9.98 (12)	59.57 (15)	7.87 (15)
(Philippines)	Range	32.2–39.4	15.2–18.6	8.6–10.9	51.0–63.9	6.9–8.3
	Standard deviation (SD)	1.96	1.16	0.7	3.2	0.4
A. magnirostris	(type specimen)	45	23.2	12.6	62	8.7
(Karakelong)						
A. moluccanus	Mean (sample size)	32.59 (12)	16.04 (11)	9.33 (9)	49.33 (13)	6.58 (12)
(Australia to Moluccas and Sangihe)	Range	29.4–35.2	14.7–17.5	8.6–10.2	46.1–54.4	6.3–6.9
	SD	2.08	1.1	0.52	2.74	0.22
A. isabellinus	Mean (sample size)	35.72 (5)	17.0 (5)	9.32 (4)	58.7 (5)	8.0 (5)
(Sulawesi)	Range	32.9–38	16.9–181.3	8.4–10.0	52.3–64.7	7.5–8.9
	SD	2.06	1.1	0.81	4.4	0.57
A. akool	Mean (sample size)	33.83 (10)	17.77 (10)	8.47 (9)	48.46 (10)	6.16 (10)
(SE Asia)	Range	31.8–36.4	16–19.5	8.1–9.3	45–50.8	6.0–6.4
	SD	1.35	0.99	0.38	1.65	0.17

[1] Gape to tip.
[2] Proximal tarsus width=width of tarsus at widest point.

TABLE 2

Published biometrics of *A. olivaceus* and *A. moluccanus*. Values in parenthesis are means. Note that these measurements may not all be directly comparable because of differences in methods of measurement and because they were made by numerous different people. (Measurements in mm; weights in g; M=male, F=female)

Taxon/author	Sample	Locality data	Bill Length M	Bill Length F	Tarsus M	Tarsus F	Wing M	Wing F	Tail M	Tail F	Weight M	Weight F
A. olivaceus		Philippines										
Ripley 1977	Not given	Philippines	36–41#	31–38#	65–69	57	166–178	148–166	57–63	53		
Parkes 1971	4F, 1M	Siquijor	39#	35.5–38 (37)#			171	160–166 (164.5)				
Parkes 1971	10F, 10M	Rest Philippines	36–39 (37.25)#	31–35 (34.3)#			166–178 (168.4)	148–162 (155.2)				
Rand & Rabor 1960	1F, 2M										292.5–312.5	250
A. m. moluccanus		Sulawesi, Moluccas, New Guinea										
Ripley 1977			27–35 (unsexed)#		40–46 (unsexed)				50–59 (unsexed)		182, 205	200, 205
Mayr 1949	2M						138,157					
Mayr 1938	5F			29–31 (30.4)		47–51 (49.2)						
Mayr 1938	3M, 6F		34–35 (34.3)		49–53 (50.7)		145–158 (153)	135–143 (139.2)				
Meyer & Wigglesworth 1898	3						145–147					
Meyer & Wigglesworth 1898	1M, 1F						146	141				
A. m. nigrifrons		Bismark Archipelago east to Solomon Islands										
Mayr 1949	20M, 20F		29–33	25–30	54–58	49–54	130–146 (139.2)	126–142				
Gilliard & Lecroy 1967	1M, 1F										179	177
A. m. ultimus		East Solomon Islands										
Mayr 1949	11M		28–32 (30.4)	25–30 (28.3)	50–55 (53)	47–52.5 (50.5)	124–134 (129.5)	121–132 (125.5)				
Mayr 1949	6M, 3F										189–248	135, 162, 192
A. m. ruficrissus		S and E New Guinea, Australia										
Marchant & Higgins 1993	12M, 6F	Australia	30–35 (31.5)	27.5–29.5 (28.9)		44.5–50 (48.3)	145–159 (152)	133–150 (143.8)		52–63 (58)		
Marchant & Higgins 1993	11M	Australia							61–71 (64.5)			
Marchant & Higgins 1993	14M	Australia			49.5–55 (51.7)							
Marchant & Higgins 1993	9M, 3F (im)	Australia									129–208 (177)	131–163
Ripley 1977	Not given		c35#	c28–30#	c56		142–158	129–142	56	56		175, 180

#Bill measurements given as "culmen". Other measurements refer to "bill length".

Although some authors have mentioned presence or absence of a red or orange swollen patch at the base of the culmen as a character distinguishing the different populations of bush hens, very few data are available concerning the actual distribution of this feature. Certainly, this feature can be seen on some specimens of *A. moluccanus* from New Britain and New Guinea (*A. m. nigrifrons*), and it is well documented for Australian birds (*A. m. ruficrissus*). However, it is not permanent, and is apparently associated with breeding (Marchant & Higgins 1993); hence its presence in other populations could have been overlooked. Whilst there is no present evidence that *A. olivaceus* can also show a swollen base to the culmen, this cannot be stated with certainty; nor is it known whether other populations of *A. moluccanus*, for example the nominate subspecies inhabiting the Moluccas, ever show this feature. This possible difference between the two species therefore needs further investigation, and indeed, if it were lacking the Moluccan population of *A. moluccanus*, might point to there being yet another allospecies.

Finally, it is worth noting that Brown Crake *A. akool* of mainland Asia has long been treated as a good species, and yet it is no more different in appearance to bush hens from the Moluccas than are bush hens from the Philippines. The plumage of *A. akool* shows many similarities to *A. moluccanus*, with the grey of the underparts only slightly paler and the upperparts only slightly more olive. [The underparts of *akool* are closest to Smithe's (1975) Light Neutral Gray (85); those of *moluccanus* are between the latter and Medium Neutral Gray (84), whilst *olivaceus* has underparts between Medium Neutral Grey (84) and Dark Neutral Gray (85)]. In plumage *A. akool* only differs from *A. moluccanus* in having a white throat (like immature *A. moluccanus*) and in lacking the buff undertail-coverts. Biometrics are also quite similar, though *A. akool* has a narrower bill (Table 1). Of additional interest is the fact that the underparts of *A. isabellina* of Sulawesi are almost exactly the same colour as the undertail-covert colour of *A. moluccanus*. In this suite of species, therefore, there are only very subtle differences in the few colours exhibited, and in the extent or distribution of such colours. Biometric differences, however, are clearly evident, and, in the case of *A. moluccanus* and *A. olivaceus*, combination with the subtle plumage changes provide compelling reasons to treat these taxa as good species.

A new species of bush hen

Having concluded that the Philippine, and Moluccan to Australasian forms of bush hen represent two good species, the question then arises as to how to treat the newly discovered taxon on Karakelong. This is apparently the only island where two bush hens are sympatric, and lying between the Philippines and Moluccas, one might anticipate that *A. olivaceus* and *A. moluccanus* would meet here. One of the species, based on the relatively small size and plumage of the birds seen that had been trapped, was identified as *A. moluccanus*: this being also known from the nearest island to the south—Sangihe—and directly to the east on Morotoi and Halmahera (White & Bruce 1986). *A. olivaceus* occurs to the north of Talaud, on Mindanao. However, comparison with the specimen of the second *Amaurornis* from Talaud clearly shows it to be different to both of these species. It is therefore concluded, for reasons given below, and using the biological species concept, that the largest *Amaurornis* taxon from Talaud, which is sympatric with *A. moluccanus*, should also be considered a separate species. The proposed name for this new species of bush hen is:

TALAUD BUSH HEN *Amaurornis magnirostris* sp. nov.

Holotype

Museum Zoologicum Bogoriense, Bogor, Indonesia, specimen number MZB 30.272: collected by Frank R. Lambert on 15 August 1996; unsexed. The bird was purchased in Beo, Karakelong Island, Talaud, from a hunter who had trapped it near Rainis (4°14′N 126°51′E) at an altitude of less than 100 m a.s.l. (Plate 2).

Diagnosis

Most similar to *Amaurornis olivaceus* but also superficially similar to *A. moluccanus*, which is sympatric with *A. magnirostris* on Talaud. *Amaurornis magnirostris* differs from both these species in being darker below with no contrasting paler-coloured undertail-coverts and in having a considerably bigger skull and longer, broader bill (Table 1) with a distinctly arched culmen.

The skull is 8.0% wider (25.5 mm in *magnirostris*, measured at the widest point) than the largest intact skull of nine *A. olivaceus* (20.3–23.7 mm) in BMNH. Bill of *A. olivaceus* (measured from the gape to the tip) ranged from 32.2–39.4 mm in the series of 15 birds with intact bills in BMNH. In comparison, the bill length of the holotype of *A. moluccanus* is 45 mm, or *c.* 14% longer than the longest bill of *A. olivaceus*. The longest-billed specimens of *A. moluccanus* in BMNH have bill lengths of 35.2 mm.

Although the depth of the bill of *A. magnirostris* falls into the range for that of *A. olivaceus* when measured at its base, the depth of the former is 15.6% larger at the nares than that for the largest measurement for any of the specimens of *A. olivaceus*. This clearly demonstrates the difference in shape of the bill, which is strongly arched in the former species, and broad along a considerable length—that of *A. olivaceus* is shorter and more tapered. The large head and bill size of *A. magnirostris* can also be discerned by comparing measurements with *A. isabellinus*, which has usually been considered to be a large species.

Compared with *A. olivaceus*, which is most similar in size, measurements of the tarsus and foot suggest that, although of similar length, lying at the upper range limit of the latter, the leg of *A. magnirostris* is stouter and the feet heavier.

A. isabellinus is similar in size to *A. magnirostris* but is smaller-headed with a smaller bill, and has more slender, longer legs. The culmen is concave or straight, not arched as in *A. magnirostris*.

It should be noted that Ripley's (1977) measurement of *A. olivaceus* and *A. moluccanus* (Table 2), based on an unknown sample size, differ in range from those provided in Table 1. Those of Parkes (1971), however, are in general agreement with those made by myself and presented in Table 1.

Although not all vocalisations are well documented, those of *A. magnirostris* that were recorded (the "piping" calls—see under Vocalisations) appear to be significantly different from those of *A. moluccanus*, which are well documented in Australia (see Figure 2).

Finally, *A. magnirostris* seems to be an adaptable forest bird, penetrating tall primary forest far from secondary vegetation, rather than a bird of disturbed habitats.

Description of holotype

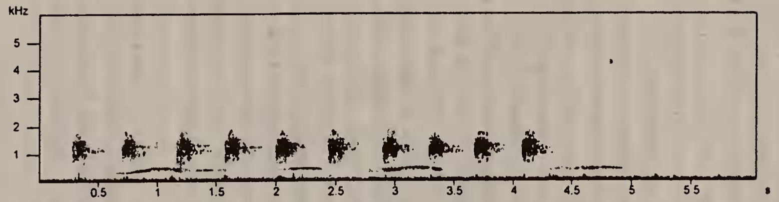
Plumage very worn, with heavy body, wing and tail moult. Worn feathers different in colour to those that are fresh. Tail feathers missing, apparently lost during capture. Presumed to be an adult (immatures of *A. olivaceus* are pale, not dark). The following description uses colour names and codes of swatches from the Naturalist's Colour Guide where it was possible: the names from Smithe (1975) start in uppercase.

Forehead to nape Dusky Brown (19) with paler tinge to some feathers; lores and feathers of orbital region similar but more sooty. Mantle Fuscous (21), Cinnamon-Brown (33) and becoming very slightly olive on back; lower back and rump Burnt Umber (22). Upperwing coverts like mantle but with patches of Cinnamon-Brown (23) (these appearing mostly on worn feathers) more pronounced on greater and median coverts. Primaries and secondaries Fuscous (21) with diffuse Cinnamon-Brown (33) leading edges. Underwing coverts dark brown. Chin, throat and neck Dark Neutral Gray (83); breast and belly a patchy mixture of Dark Neutral Gray (83) and Fuscous (21), becoming more Burnt Umber (22) on flanks and feathers of tarsus. Undertail-coverts Dark Neutral Gray (83), not contrasting with belly. Iris bright red; bill long, broad and arched, the lower mandible pale green becoming pale blue-green on distal third; upper mandible below nostril and basally pale green, culmen dark olive from base to past nares, but distal third pale green. Legs dark olive brown with bright yellow frontal part to upper leg from feathering to just below ankle joint (i.e. covering the entire tibiotarsus).

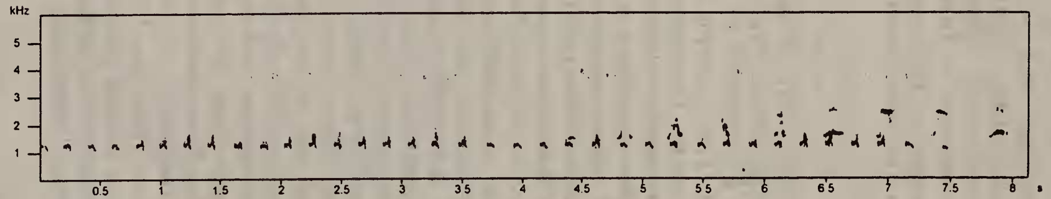
Biometrics are provided in Table 1. Primary three (counted descendently) missing, and wings frayed, but wing length estimated to be approximately, or slightly longer than, 168 mm (although in heavy moult, the absence of primary three may have resulted from capture/transportation).

Etymology

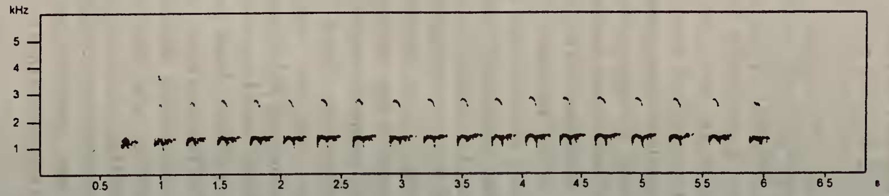
This species has been named in recognition of its large bill. The three taxa of "plain bush hens" that occur from Philippines to the New Guinea region are similar in many respects, but the bill and large skull of *Amaurornis magnirostris*, as well as its uniform underparts, set it apart from the others. The large bill is its most striking character in the



rails1.wav [Lambert]



aus1rail.wav [Swaby]



aus2rail.wav [Stewart]

Figure 2. Sonagrams of the piping calls of *A. moluccanus* and *A. magnirostris*. Top: *A. magnirostris*, recorded by F. Lambert, 2 September 1996, Karakelong Island, Talaud. Middle: *A. moluccanus*, Cape York, Australia, Swaby & Griffin 1978. Bottom: *A. moluccanus*, recorded by David Stewart, reproduced in Buckingham & Jackson 1987.

field. The common name of the species, Talaud Bush Hen, is chosen to emphasize the known range of the species, which may be very restricted.

Vocalisations

Bush hens were heard on Karakelong on many occasions, although never in the interior of primary forest, despite the presence of *A. magnirostris* in this habitat. The distinctive growling shrieks of bush hens are well known, and are made by both *A. moluccanus* and *A. olivaceus.* They sound different, the latter sounding harsher, when tape recordings are compared, but there is considerable variation in such calls (Beruldsen 1975). These calls are often made in antiphonal duet (Clarke 1975). It was not proved whether or not *A. magnirostris* also makes these "shrieking" calls, although quiet shrieks (perhaps better described as croaking with rasping—R. Ranft pers. comm.) can be heard in the background of a tape recording of the "piping" call of *A. magnirostris* and seem likely to have been this species. These calls sound quite similar to four tape recordings of the shrieking call of *A. olivaceus* held in the British Library National Sound Archive collection, but it was not possible to make sonagrams of the probable *A. magnirostris* calls (since sounds produce no discernible pattern, but rather a smudge mixed with background noises). This tape recording made by the author is deposited at the British Library National Sound Archive.

The only call definitely attributable to *A. magnirostris* was a monotonous series of very loud notes that sound rather frog-like. The notes can best be described as low-pitched barks. Although significantly different from the monotonous series of calls made by Australian *A. moluccanus*, the type of call is similar in pattern, and hence here referred to as the piping call based on those described and illustrated (using sonagrams) by Clarke (1975). He observed *A. moluccanus* feeding whilst making this call. Playback of the piping call of *A. magnirostris* elicited an immediate response from calling birds, which quietly but rapidly investigated the area from where the playback emanated. Figure 2 compares two sonagrams of piping calls of *A. olivaceus* with those of *A. magnirostris.* Other sonagrams of the piping calls of *A. olivaceus* are provided by Clarke (1975) and Marchant & Higgins (1993).

Distribution, habitat and status

The Talaud Bush Hen is presently known only from Karakelong Island, in the Talaud Archipelago. It seems likely that it must also have occurred on neighbouring islands, but whether it survives on them (in particular, Salebabu and Kabaruang) remains to be determined. Karakelong is the largest island (*c.* 600 km^2) in the Talaud Archipelago and is still endowed with good areas of forest that occur from near sea level to the highest peak. Evidence suggests that the Talaud Bush Hen is widespread on the island. Sightings in various habitats at different altitudes, from rank vegetation near forest edge to dry dense primary forest slopes, suggest that the species is adaptable and can probably tolerate limited habitat modification. Karakelong still has significant natural forest cover and a diversity and abundance of wetland habitats, including pristine rivers, forested swamps and rank scrub and grasslands bordering forest. At the present time, it therefore seems very unlikely that the Talaud Bush Hen is threatened.

Nevertheless, since the ecological requirements of the Talaud Bush Hen are unknown, future changes in land use on such a small island could conceivably alter habitats to the extent that it becomes threatened. Whilst there are two protected areas totalling *c.* 21 000 ha on Karakelong, there is virtually no provision to protect these areas on the ground (Sujatnika *et al.* 1995, Sujatnika *in litt.* 1997; pers. obs). Both areas are under pressure from smallholder encroachment, and forest clearance for transmigration may also pose a threat in the long term (Whitten *et al.* 1987, Lambert 1997).

Bush hens are occasionally trapped for food using snares, or caught by dogs. However, the trapping of terrestrial birds for food did not seem to be an intensive activity, and usually occurs only in the vicinity of villages (these being virtually confined to the coast). Hunting is unlikely to constitute a significant threat to the species at present levels.

I noted that large rats (*Rattus* sp.) were abundant on the nearby island of Sangihe in 1996, particularly in plantations and the more degraded forest areas, but I did not encounter them on Karakelong. Rats (of unidentified species) are present, however, in altered habitats on the island (J. Wardall, *in litt.* 1998) and more extensive habitat modification there could conceivably alter patterns of abundance.

Studies of bones excavated on Pacific islands suggests that large numbers of birds that inhabited remote islands became extinct subsequent to the arrival of man. These studies suggest that, considering all bird groups known to be present on these islands, rails have lost most species to human impact (Steadman 1995). Whilst the exact cause of such extinctions will never be known, it is likely that rats played a role in many cases (see, for example, Atkinson 1985). If susceptibility to depredation by rats is accepted as a characteristic of island rail populations, the Talaud Bush Hen should be considered as a Near-Threatened species (N. J. Collar, pers. comm.). The potential threat from rats and other introduced mammalian predators to the rallids of Talaud should therefore be carefully monitored.

Discussion

Although the Talaud Islands are a remote archipelago, it is surprising that previous ornithologists who have made observations or collected specimens on the islands have failed to find either of the bush hens that live there, since both are very vocal. The Talaud Islands lie within the Sangihe–Talaud Endemic Bird Area (ICBP 1992, Sujatnika *et al.* 1995, Stattersfield *et al.* 1998), but prior to the discovery of *A. magnirostris* and the recently described Talaud Rail *Gymnocrex talaudensis* (Lambert 1998), no undisputed species were known to be confined to Talaud, although one taxon, Obscure Kingfisher, has been variously treated as a full species *Todiramphus (Halcyon) enigma* (e.g. White & Bruce 1986) or as a distinct subspecies of Collared Kingfisher *T. chloris* (e.g. Fry *et al.* 1992, Inskipp *et al.* 1996). The discovery of two rails possibly endemic to Talaud is therefore of great importance, considerably elevating the conservation value of the islands.

The sympatry of *A. magnirostris* and *A. moluccanus* on Talaud is of great interest since this is the only known locality where two apparently ecologically similar species of *Amaurornis* coexist (Ripley 1977). Only the strikingly different, and migratory, White-breasted Waterhen *A. phoenicurus* is broadly sympatric with congeners throughout its range. Bush hens have not, apparently, colonised Sulawesi, where the endemic Isabelline Waterhen *A. isabellinus* is found in many habitats from sea level to 1,400 m (White & Bruce 1986, Coates *et al.* 1997).

Amaurornis moluccanus is not known to make regular movements and must be assumed to be resident on Talaud. Its presence on many islands from Australasia to Wallacea, however, is indicative of good powers of dispersal and it may be a relatively recent arrival in the archipelago. This could partly explain why it has not been previously recorded from Karakelong. That *A. moluccanus* has not colonised the Philippines might be a reflection of closer ecological requirements of *A. moluccanus* and *A. olivaceus*.

On Talaud, both *A. magnirostris* and *A. moluccanus* occur in open, scrubby habitats, but based on the observations of *A. magnirostris* to date, it seems probable that this species is more of a forest bird, and that it wanders into adjacent scrub, rank vegetation and overgrown plantations. Although *A. moluccanus* may also occur in forest, this may be a marginal habitat for the species.

Examination of the collection of *Amaurornis* bush hens in the BMNH clearly supports the idea that previously recognised taxa of these birds belong in two separate species differing significantly in appearance and size. That their taxonomic status has remained in doubt for so long is merely because careful examination of museum specimens was not carried out. There are clearly many unanswered taxonomic questions in the Oriental region (see, for example, the excellent annotations in Inskipp *et al.* 1996), and the alarming ongoing lack of professional taxonomists who are able to devote time to answering such questions should be a cause for considerable concern. Recent opportunistic investigations into various bird taxa (e.g. Collar & Andrew 1987, Brooks *et al.* 1992, Collar & Long 1996, Lambert & Woodcock 1996) suggest that avian biodiversity within this region is presently underestimated, and that many taxonomic revisions are needed.

Summary

This paper reviews the taxonomy of bush hens occurring from the Philippines through Indonesia to Australia and the New Guinea region and describes a new species of Rail, the Talaud Bush Hen *Amaurornis magnirostris*.

Examination of bush hen specimens in BMNH showed that there were consistent differences in plumage and biometrics, and in comparable types of vocalisations between the Philippine population

and the populations to the east, therefore supporting the opinion that there are two species: *A. olivaceus* in the Philippines, and *A. moluccanus* elsewhere. Two species of bush hen were found on Karakelong Island, in the Talaud Islands of Indonesia. One of these species was identified as *A. moluccanus*, whilst the other, collected on 6 September 1996, is shown to be a new species, the Talaud Bush Hen *A. magnirostris*. The sympatry of *A. magnirostris* and *A. moluccanus* on Talaud is of great interest since this is the only known locality where two apparently ecologically similar species of *Amaurornis* co-exist. Talaud Bush Hen differs from the other bush hen species in having darker underparts with no contrasting paler-coloured undertail-coverts and in its considerably bigger skull and longer, broader bill with a distinctly arched culmen. Its habitat preferences may also differ, being primarily a forest species and occurring in primary forest far from disturbed areas. Vocalisations apparently differ from comparable calls of *A. moluccanus*, although it was not possible to compare these with similar calls of *A. olivaceus*. Prior to the discovery of *A. magnirostris* and the recently described Talaud Rail *Gymnocrex talaudensis*, no undisputed species were known to be confined to Talaud. The existence of two rails possibly endemic to Talaud therefore considerably elevates the conservation value of the islands. Evidence suggests that the Talaud Bush Hen is widespread on the island, where significant areas of suitable habitat still occur. The species is therefore probably not immediately threatened. Nevertheless, since its exact ecological requirements remain unknown, and in view of the proven vulnerability of rails on islands, many of which have become extinct in the past, the Talaud Rail should be considered to be Near-Threatened.

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